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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/613,162	07/10/2000	Thomas Carl Mesing	13DV12817	9214

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EXAMINER

MUSSER, BARBARA J.

ART UNIT	PAPER NUMBER
1733	

13

DATE MAILED: 12/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/613,162

Applicant(s)

MESING ET AL.

Examiner

Barbara J. Musser

Art Unit

1733

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 and 31-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 31-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☒ Interview Summary (PTO-413) Paper No(s). 11
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-12 and 32-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wiley in view of Doyle(U.S. Patent 5,271,588), Livesay et al., and the admitted prior art.

Wiley discloses forming tube clamps by compression molding fiber-reinforced polymer in the shape of a tube clamp and the removing the shaped material from the mold.(Col. 3, ll. 44-57) While the reference discloses polyamide, a thermoplastic, the material listed, PMR-15, is a mixture of polyimide and carbon fibers as shown by Doyle(Col. 6, ll. 40-41) Clearly the use of polyamide rather than polyimide is a spelling mistake in Wiley. Thus the material used, PMR-15, is a thermosetting material, i.e. is capable of curing. One in the art would appreciate that the material was cured as that is how thermosetting materials are intended to be used.

The reference does not disclose unidirectional pre-pregs. Doyle discloses a composite tube clamp made from random or aligned, i.e. oriented, fibers impregnated in a thermosetting resin.(Col. 6, ll. 35-50) It would have been obvious to one of ordinary skill in the art at the time the invention was made to use unidirectional fibers in the tube clamp of Wiley since Doyle discloses random and aligned fibers are well-known

alternatives when forming a tube clamp and that aligned fibers can be chosen to provide suitable strength of the clamp.(Col. 6, ll. 47-50)

Wiley is silent as to whether one or more layers of material are used to form the tube clamp. However, using one or more sheets of fibers to form a composite is well-known per se in the composite molding arts as shown for example by Livesay et al. which discloses one or more fiber sheets can be laid-up in a mold to form a structure(Col. 4, ll. 12-17) and by the admitted prior art which discloses forming a tube clamp from multiple layers of material.(Pg. 2-3) It would have been obvious to one of ordinary skill in the art at the time the invention was made to use multiple fiber layers as it is known in general in the molding arts to use one or more layers of fibers to form a product as shown for example by Livesay(Col. 4, ll. 12-17) particularly in view of the admitted prior art which discloses it is known to make tube clamps from multiple layers of material.(Pg. 2-3) Since aligned fiber layers do not have fibers running perpendicular to the plane of the layer, there would be no exposed fibers when the material was removed from the mold.

Regarding claims 2-4, Doyle only discloses the fibers can be aligned. Livesay et al. discloses that aligned fibers can be unidirectional or woven fabric.(Col. 4, ll. 12-17) One in the art would appreciate that the aligned fibers of Doyle in the clamp of Wiley could be either unidirectional or woven fabric since Livesay et al. discloses these types of aligned fibers can be used in molding, and since one in the art would use the generally available types of aligned fiber pre-pregs as shown for example by Livesay.(Col. 4, ll. 12-17)

Regarding claim 4, woven fabrics are considered bi-directional since the warp and weft are oriented in different directions.

Regarding claim 5, the sheet is formed from graphite fiber with polyimide resin.(Wiley, Col. 3, ll. 49; Alston et al., Col. 1, ll. 33-36)

Regarding claim 6-8, Wiley discloses clamp with the same thickness throughout. The admitted prior art discloses a clamp with a different thickness in different locations.(Figure 1) One in the art would appreciate the method of Wiley, Doyle, Livesay et al., and the admitted prior art could be used to form other types of clamps such as that of the admitted prior art since they are both clamps used in the airline industry and therefore have the same type of requirements. When forming clamps such as that of the admitted prior art, one in the art would appreciate that a filler would be needed between the top and bottom of the clamp as the clamp is not the same thickness throughout and fiber plies are. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use some type of filler such as fiber plies cut to shape since this would fill in the space between the top and bottom of the clamp known in the admitted prior art while using the same types of materials with the same strengths.

Regarding claims 10 and 11, Wiley discloses the clamp is compression molded.(Col. 3, ll. 50-51) but does not disclose the exact type of apparatus used. Livesay et al. discloses products can be formed by laying up dry fiber mats, impregnating them with resin, and autoclaving them.(Col. 1, ll. 29-39) It would have been obvious to one of ordinary skill in the art at the time the invention was made to lay-

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up dry fiber layers, impregnate them with resin, and autoclave them, since Livesay et al. discloses this method forms structures with high strength-to-weight ratios(Col. 1, ll. 16-20) as would be required for a clamp.

Regarding claim 12, Wiley discloses the process to make a clamp. One in the art would understand that a clamp would have two halves, both made via the same molding technique.

3. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wiley, Doyle, Livesay et al, and the admitted prior art as applied to claim 2 above, and further in view of Yamamoto et al.(SIR H1162).

The references cited do not disclose different plies of unidirectionally oriented fibers arranged in different directions so the fibers are at an angle to each other. It is well known in general in the fiber prepreg arts to orient different layers of unidirectional fibers in different directions so that the web is not weak in any one direction in particular as shown for example by Yamamoto et al. which discloses layering multiple layers of unidirectional plies so that the fibers are oriented in different directions.(Figure 6) It would have been obvious to one of ordinary skill in the art at the time the invention was made to orient different plies of unidirectional fibers in different directions since it is well-known in the general in the fiber prepreg arts to do so as shown for example by Yamamoto et al.(Figure 6)

Response to Arguments

4. Applicant's arguments with respect to claims 1-12 have been considered but are moot in view of the new ground(s) of rejection.

Regarding applicant's argument that the use of compression molding teaches away from multiple layers, compression molding is a general technique which is well-known to be capable of being used on single or multiple layers. As applicant did not provide a copy of the ASM page applicant referred and the on line version did not contain page numbers, examiner was not able to determine exactly why applicant thought the reference only taught single layers. However, a review of the entire chapter on line indicates that glass prepregs or laminates could be compression molded. Laminates are generally considered to consist of multiple layers joined together. Therefore, it appears the ASM Handbook suggests compression molding can be used for multiple layers.

Regarding applicant's argument that Livesay et al. is directed to resin transfer molding, the portion of the reference used for the main rejection is the admitted prior art of the reference. The admitted prior art discloses both resin transfer molding(dry lay-up) and another type of molding using pre-impregnated layers. This indicates that molding involving pre-impregnated layers, like compression molding, can have multiple layers.

Regarding applicant's argument that the grommets of Wiley teach away from the invention as they shield the tube from the clamp shell, applicant does not require that the interior surface of the clamp directly contact the tube being clamped. The claims do not exclude a grommet.

Regarding applicant's argument that there is no teaching or suggestion in Wiley to use multiple layers, a variation in a process that is well-known in the art such as using multiple layers rather than a single layer would have been obvious to one of ordinary skill since the use of multiple layers in molding is extremely well known. The teaching or suggestion can be found in the knowledge of one in the art. Although the references do not state it is known in the clamp making art to use multiple layers, it is known in general in the molding arts, which are used to make the clamp.

Regarding applicant's argument as to exposing the fibers, since the combination of references uses aligned fibers molded to the final shape in the same method with the same materials as applicant, the same result would occur, namely that the fibers would not be exposed.

The changes to Wiley would not be contrary to the teaching of the art as a whole since they are simply the replacement of a single layer with multiple layers as is well-known in general in the molding arts, and the replacement of the random fiber mat of Wiley with an aligned fiber mat as in Doyle, and Doyle is directed to clamps as is applicant.

Regarding the problem solved by applicant being abrasion of the tube, applicant has not amended the claims such that the limitation of the clamp directly contacting the tube is present.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Barbara J. Musser** whose telephone number is (703)-

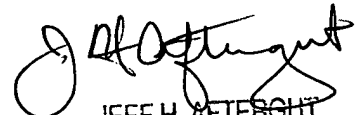
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305-1352 until December 20 when it changes to (571) 272-1222. The examiner can normally be reached on Monday-Thursday; alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on 703-308-3853. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.


BJM


JEFF H. AFTERGUT
PRIMARY EXAMINER
GROUP 1300